

IN THE CLAIMS:

Amend claims 5-7, 12, 15 and 16 as set forth below:

1. (previously amended) A spindle, comprising:
 - a shaft;
 - a sleeve coaxial with the shaft;
 - a first gap formed between the sleeve and the shaft for facilitating rotation therebetween;
 - a hub bound to the sleeve;
 - a second gap located between the hub and the sleeve, the second gap being larger than the first gap; and wherein
 - the hub is adapted to be secured to a rotor magnet which is adjacent to a stator, such that the second gap reduces magnetic flux leakage into the sleeve and a substantially negligible amount of flux crosses the first gap into the shaft.
2. (previously amended) The spindle of claim 1, further comprising a pattern of shallow groove features incorporated on one of the shaft and the sleeve to facilitate hydrodynamic generation of a fluid film of high pressure and stiffness.
3. (previously canceled)
4. (original) The spindle of claim 1 wherein the second gap is filled with a substantially non-permeable material.
5. (presently amended) [The spindle of claim 1] A spindle, comprising:
 - a shaft;
 - a sleeve coaxial with the shaft;
 - a first gap formed between the sleeve and the shaft for facilitating rotation therebetween;
 - a hub bound to the sleeve;
 - a second gap located between the hub and the sleeve, the second gap being larger than the first gap; wherein

the hub is adapted to be secured to a rotor magnet which is adjacent to a stator, such that the second gap reduces magnetic flux leakage into the sleeve and a substantially negligible amount of flux crosses the first gap into the shaft; and wherein
the second gap is filled with epoxy.

6. (currently amended) [The spindle of claim 1] A spindle, comprising:

a shaft;

a sleeve coaxial with the shaft;

a first gap formed between the sleeve and the shaft for facilitating rotation therebetween;

a hub bound to the sleeve;

a second gap located between the hub and the sleeve, the second gap being larger than the first gap; wherein

the hub is adapted to be secured to a rotor magnet which is adjacent to a stator, such that the second gap reduces magnetic flux leakage into the sleeve and a substantially negligible amount of flux crosses the first gap into the shaft; and wherein

the second gap is the range of 200 to 300 microns.

7. (currently amended) A precision spindle assembly, comprising in combination:

a stator;

a spindle hub having a rotor magnet mounted thereto that is rotatable relative to the stator;

wherein the spindle hub comprises:

a ferromagnetic stationary shaft;

a rotatable ferromagnetic sleeve coaxial with the shaft;

a fluid bearing gap formed between the sleeve and the shaft for facilitating rotation therebetween;

a ferromagnetic hub bound to the sleeve;

a large gap located between the hub and the sleeve, wherein the large gap is larger than the fluid bearing gap and is in the range of 200 to 300 microns; and

a substantially non-permeable material[[, such as epoxy,]] filling the large gap in order to reduce magnetic flux leakage into the sleeve such that a substantially negligible amount of flux crosses the fluid bearing gap into the shaft.

8. (original) The precision spindle assembly of claim 7, further comprising a pattern of shallow groove features incorporated on one of the shaft and the sleeve to facilitate hydrodynamic generation of a fluid film of high pressure and stiffness.

9. (previously canceled)

10. (previously canceled)

11. (previously canceled)

12. (presently amended) A method of insulating a precision spindle assembly against magnetic flux, comprising the steps of:

(a) providing a stator, and a spindle assembly with [[a rotor magnet,]] a shaft, a sleeve, a fluid bearing gap between the sleeve and the shaft, a hub on one of the shaft and the sleeve, [[and]] a gap between the hub and the sleeve, and a rotor magnet radially external to the shaft, sleeve, hub, and both gaps;

(b) rotating the rotor magnet relative to the stator to induce a magnetic field; and

(c) reducing magnetic flux leakage into the sleeve with the gap such that a substantially negligible amount of flux crosses the fluid bearing gap into the shaft.

13. (original) The method of claim 12 wherein step (a) comprises forming a pattern of shallow groove features on one of the shaft and the sleeve to facilitate hydrodynamic generation of a fluid film of high pressure and stiffness.

14. (original) The method of claim 12 wherein step (a) comprises filling the gap with a substantially non-permeable material.

15. (presently amended) [[The method of claim 12]] A method of insulating a precision spindle assembly against magnetic flux, comprising the steps of:

(a) providing a stator, and a spindle assembly with a rotor magnet, a shaft, a sleeve, a fluid bearing gap between the sleeve and the shaft, a hub on one of the shaft and the sleeve, and a gap between the hub and the sleeve;

(b) rotating the rotor magnet relative to the stator to induce a magnetic field;

(c) reducing magnetic flux leakage into the sleeve with the gap such that a substantially negligible amount of flux crosses the fluid bearing gap into the shaft; and wherein

step (a) comprises filling the gap with an epoxy.

16. (presently amended) [[The method of claim 12]] A method of insulating a precision spindle assembly against magnetic flux, comprising the steps of:

(a) providing a stator, and a spindle assembly with a rotor magnet, a shaft, a sleeve, a fluid bearing gap between the sleeve and the shaft, a hub on one of the shaft and the sleeve, and a gap between the hub and the sleeve;

(b) rotating the rotor magnet relative to the stator to induce a magnetic field;

(c) reducing magnetic flux leakage into the sleeve with the gap such that a substantially negligible amount of flux crosses the fluid bearing gap into the shaft; and wherein

step (a) comprises forming the gap in the range of 200 to 300 microns.